REMARKS

Claims 1-14, 16-34 and 36-38 are pending. Claims 2, 10, 13, 33 and 34 are amended. Claims 15 and 35 are cancelled. Claims 30-34 and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,675,033 ("Lardo"). Claims 1, 6-9, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lardo in view of U.S. Patent No. 5,269,319 ("Schulte"). Claims 10, 14, 16 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lardo and Schulte in view of U.S. Patent No. 5,902,251 ("Higgins"). Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lardo and Schulte further in view of U.S. Patent No. 5,109,859 ("Jenkins"). Claims 11, 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lardo, Schulte, Higgins and Jenkins. Claims 2-5 and 13 are objected to as being dependent upon a rejected base claim. Claims 22-26 are allowed. The applicant traverses the rejections and respectfully requests reconsideration in view of the amendments and remarks below.

I. §102 Rejections

Claims 30-34 and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Lardo.

Claims 30-32

Claim 30 recites an intravascular device including an elongate catheter, an antenna and a first elongate conductor and a second elongate conductor. The elongate catheter has an elongate shaft with a proximal end and a distal end. The antenna is formed of conductive material electroplated on a distal region of the elongate shaft. The first elongate conductor and second elongate conductor extend from a proximal region of the elongate member to a distal region thereof and at least one of the first and second elongate conductors is electrically connected to the antenna.

The Examiner asserts that Lardo discloses the limitations of claim 30. In particular, the Examiner refers to Lardo at Col. 4, lines 10-40, Col. 8, line 64 – Col. 9, line 24 and Col. 10, lines 65-67, which correspond to Lardo's whip antenna shown in Fig. 2. Lardo does not disclose a

device that includes an elongate catheter having an elongate shaft, where an antenna is formed of a conductive material electroplated on a distal region of the shaft. The whip antenna shown in Lardo's Fig. 2 includes a wire at a distal end of a device, with an insulator material 104 around the outside of the wire. Although Lardo does disclose there can be a conductive coating on the wire, the antenna is not electroplated onto the *distal end of the shaft of a catheter*. Further, Lardo's device does not include two elongate conductors where at least one of the elongate conductors is electrically connected to the antenna. Lardo discloses a shield layer 103, but it does not appear to be electrically connected to the antenna 106. Accordingly, Lardo fails to disclose the limitations of claim 30, which is therefore not anticipated by Lardo and is in condition for allowance.

Claims 31 and 32 depend from claim 30 and are therefore allowable for at least the same reasons. Claim 31 is also allowable for the following additional reason. Claim 31 recites the device of claim 30, where the antenna includes "a plurality of portions of conductive material electroplated on a distal region of the elongate shaft and in spaced relation to one another about the elongate shaft." Lardo clearly does not disclose an antenna including a plurality of portions of electroplated conductive material. Claim 32 is also allowable for the following additional reason. Claim 32 recites the device of claim 31, where "each of the portions of conductive material are electrically connected to one of the first and second elongate conductors." First, Lardo does not disclose first and second elongate conductors. Second, Lardo does not disclose portion of electroplated conductive material on a distal region of an elongate shaft. Finally, Lardo does not disclose portions of conductive material electrically connected to one of the first and second elongate conductors. Accordingly, claims 31 and 32 are in condition for allowance.

Claims 33, 34 and 36-38

Claim 33 recites an intravascular device including an elongate member and a braid disposed on at least a portion of the elongate member, the braid including at least two braid strands. At least one of the braid strands forms a part of an electrical circuit including a transmission line and an antenna, where, a first of the braid strands is formed of electrically conductive material having a portion thereof exposed to form the antenna.

Lardo does not disclose a device where a braid strand is formed of an electrically conductive material having a portion exposed to form an antenna. Lardo discloses a whip antenna device where a shielding layer can be formed from a braided material (see Fig. 2, and Col. 10, lines 6 and 66). However, the shielding layer does not form part of the antenna, and there is no disclosure of using a braid strand to form the antenna. Accordingly, Lardo does not disclose the limitations of claim 33, which is in condition for allowance. Claims 36-38 depend from claim 33 and are therefore allowable for at least the same reasons.

Claim 34 recites an intravascular device including an elongate member and a braid disposed on at least a portion of the elongate member, the braid including at least two braid strands wherein at least one of the braid strands forms a part of an electrical circuit including a transmission line and an antenna. The two braid strands include electrically conductive material electrically insulated from one another and are each connected to the antenna to form the transmission line. Lardo does not disclose a device including two such braid strands. The braid disclosed in Lardo is included in the shielding layer and is not disclosed as being connected to the antenna to form the transmission line. Accordingly, claim 34 is allowable over Lardo.

III. §103 Rejections

Claims 1, 6-9, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lardo in view of Schulte.

Claims 1 and 6-9

Claim 1 recites an elongated intravascular device adapted to be advanced through a vessel of a subject. The device includes an elongated electrical conductor, a first electrically conductive layer disposed coaxially to the elongated electrical conductor, at least one dielectric layer disposed between the elongated electrical conductor and the first electrically conductive layer and an electrically conductive coil. The electrically conductive coil includes a first end being electrically coupled to the elongated electrical conductor and a second end being electrically coupled to the first electrically conductive layer. A circuit including the elongated electrical conductor, the electrically conductive layer, the dielectric layer and the coil forms an impedance-matching circuit.

The Examiner asserts that Lardo discloses substantially all the claimed features of claim 1, and recites all of the limitations of claim 1, stating that they are disclosed by Lardo. However, the Examiner then goes on to assert that Lardo "do [*sic*] not teach electrically conductive coil". The Examiner relies on Schulte to teach an electrically conductive coil. The Examiner asserts that Lardo discloses that a circuit comprising the elongated electrical conductor, the electrically conductive layer, the dielectric layer and the coil forms an impedance-matching circuit. Thus, it is unclear whether the Examiner is asserting that Lardo does or does not disclose an electrically conductive coil.

In any event, Lardo does not disclose an intravascular device including a circuit comprising the elongated electrical conductor, the electrically conductive layer, the dielectric layer where the coil that forms an impedance matching circuit. By contrast, Lardo discloses an interface box used between the MRI machine and the guidewire disclosed in Lardo (Col. 14, ll. 53-55). The interface box is not an intravascular device; the guidewire that connects to the interface box is an intravascular device. Thus, Lardo actually teaches away from an intravascular device including an impedance matching circuit, as the impedance matching circuit of Lardo is included in a separate device, the interface box. The guidewire (i.e., the intravascular device) attaches by a connector to the interface box (Col. 14, l. 53 to Col. 15, l. 31). There is no disclosure of an impedance matching circuit that is included within and formed from the components of the guidewire, e.g., the antenna. By contrast, claim 1 recites an intravascular device that includes an impedance matching circuit.

Accordingly, Lardo fails to disclose the elements of claim 1, and claim 1 is in condition for allowance. Claims 6-9 depend from claim 1 and are therefore in condition for allowance for at least the same reasons.

Claims 27-29

Claim 27 recites an elongated intravascular device including an elongated electrical conductor, a dielectric layer disposed on top of the elongated electrical conductor, and a shield layer including an electrically conductive polymer disposed on top of the dielectric layer. A first electrical short couples the elongated electrical conductor to the shield layer at a first longitudinal

position along the elongated electrical conductor. A second electrical short couples the elongated electrical conductor to the shield layer at a second longitudinal position, distal of the first longitudinal position, along the elongated electrical conductor. The device further includes a non-electrically-conductive gap in the shield layer at a longitudinal position just proximal of the second electrical short.

The Examiner asserts that Lardo discloses all of the limitations of claims 27 and 29 (and does not refer to Schulte). Lardo discloses an antenna (shown in FIG. 6) including a helical coil 208 and a linear whip antenna 106, where there can be an electrical connection between the helical coil and the linear whip antenna. A thin insulator 210 can be placed between the linear whip antenna and the helical coil (see Col. 12, lines 41-66). The Lardo antenna does not include the limitations of claim 27. First, the helical coil is not an electrically conductive polymer disposed on top of a dielectric layer that is disposed on top of an elongated electrical conductor, as required by claim 1. Second, there is no non-electrically conductive gap in a shield layer at a longitudinal position just proximal a second electrical short, as required by the claim. If the helical coil is a shield layer (which is not conceded), it does not include a non-electrically conductive gap – as the helical coil is a continuous element. Accordingly, the limitations of claim 27 are not disclosed by Lardo, and claim 27 is in condition for allowance. Claims 28 and 29 depend from claim 27 and are therefore allowable for at least the same reasons.

Claims 10-12, 14 and 16-21

The Examiner rejected claims 10, 14, 16 and 18-21 under 35 U.S.C. 103(a) as being unpatentable over Lardo and Schulte in view of Higgins. Claim 10 recites an intravascular device including a cylindrical inner wall defining a lumen and formed of an expandable electrically conductive material, a cylindrical outer wall formed of an electrically conductive material and an electrically conductive coil. The inner and outer walls are separated by a compressible dielectric material, wherein varying the pressure in the lumen changes the spacing between the inner and outer walls, thereby changing the capacitance between the inner and outer wall. A first end of the coil is electrically coupled to a distal end of the inner wall, and a second end of the coil is electrically coupled to a distal end of the outer wall. A proximal end of the

inner wall and a proximal end of the outer wall are electrically coupled to respective transmission lines. A circuit including the coil, the inner wall, the outer wall and the respective transmission lines can be tuned by varying the pressure within the lumen, thereby changing the capacitance between the inner and outer walls.

Neither Lardo, Schulte nor Higgins, alone nor in combination, disclose the limitations of claim 10. Higgins does disclose a catheter including an outer conductor 90 formed over a dielectric material and compressing said dielectric material. The flexibility is provided so the transmitter cable can be manipulated and passed along a narrow passageway. However, none of the references show a circuit (including a coil, inner and outer walls) that can be tuned by varying the pressure within a lumen, thereby changing the capacitance between the inner and outer walls as required by claim 10. Accordingly, claim 10 is in condition for allowance. Claims 11, 12, 14 and 16-21 depend from claim 10 and are therefore allowable for at least the same reasons.

III. Allowable Subject Matter

The Examiner has indicated that claims 2-5 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Claim 2 is amended to be rewritten in independent form. Accordingly, claim 2 is now in condition for allowance, as are claims 3-5 which depend therefrom. Claim 13 depends from claim 10, which is in condition for allowance as discussed above. Accordingly, allowance of claim 13 is requested. The applicant thanks the Examiner for allowing claims 22-26.

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Enclosed is a check in the amount of $400.00 for two excess independent claims. Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 7/25/05

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